

REMARKS

Claims 1-34 are canceled; claims 35 and 44 are amended; and claims 35-45 are pending in the application.

The pending claims stand rejected for obviousness-type double patenting relative to claims of application serial numbers 11/078537 and 11/078822. Applicant respectfully refers the Examiner to MPEP §804.01 which states that it is impermissible for the Patent Office to find obviousness-type double patenting between claims that the Office had previously restricted. In the present case, the claims now pending in application serial numbers 11/078537 and 11/078822 were restricted from the claims of the present application (which correspond to original claims 1-11 of the present application) with an Office Action mailed February 16, 2005 pertaining to the present application. It is thus impermissible for the Office to find obviousness-type double patenting between claims of the present application and those of either of application serial numbers 11/078537 and 11/078822. Applicant therefore respectfully requests that the obviousness-type double patenting rejection be withdrawn in the Examiner's next Action.

Claims 35-45 stand rejected as being unpatentable over Chiang. Applicant has amended claims 35 and 44, and believes that the pending claims are now in condition for allowance.

Referring to claim 35, applicant has amended such claim to recite an atomic layer deposition method utilizing one or both of electric field gradient and a magnetic field gradient to align **non-ionized and electrically neutral** molecules during atomic layer deposition. Support for the amendment to claim 35 can be found in the originally-filed

application at, for example, figure 4 and the accompanying text of the specification which shows the electrically neutral and non-ionized ammonia molecule aligned with a gradient.

The cited reference of Chiang teaches utilization of electrical biasing to align ionized species (see, for example, column 20, lines 30-38) or electrically charged species (see, for example, figures 39(a) and 39(b), and column 31, lines 42-62). Chiang appears to be relying on charge characteristics associated with ionized and/or charged particles for enabling alignment of the particles, and does not disclose or suggest that electrical biasing can also be utilized to align non-ionized and electrically neutral molecules. In other words, Chiang teaches only that electrical biasing can be utilized to align ionized and/or electrically charged particles, and provides no motivation to utilize electrical biasing to accomplish the amended claim 35 recited alignment of non-ionized and electrically neutral molecules. Accordingly, amended claim 35 is allowable over Chiang.

Claims 36-43 depend from claim 35, and are therefore allowable for at least the reasons for which claim 35 is allowable.

Referring next to claim 44, such claim is amended to place the claimed in independent form. Claim 44 recites a process in which an electric field gradient is utilized during atomic layer deposition to align molecules: and specifically in which an electric field gradient is in a first configuration during incorporation of at least portions of first molecules into a material; and is in a second configuration, different from the first configuration, during incorporation of at least portions of second molecules into the material. The claim recites that a difference between the first and second configurations of the electric field gradient is that the first electric field gradient configuration increases along a first vector, and the

second electric field gradient configuration increases along a second vector which is different from the first vector.

The Examiner rejects claim 44 over Chiang and contends that it would be obvious to use an electric field gradient of Chiang in two different orientations during an atomic layer deposition process. Applicant respectfully submits that to the extent that Chiang discloses utilization of an electric field gradient during atomic layer deposition, the gradient is always along the same direction during the entire atomic layer deposition process, and specifically is in the same direction during deposition of all species utilized in the atomic layer deposition process. The only teaching of the changing of an electric field gradient during an atomic layer deposition process is applicant's disclosure, which would suggest that the Examiner's rejection of claim 44 is based on hindsight reconstruction of applicant's claimed invention rather than specific teachings of the prior art. The Examiner is respectfully reminded that hindsight reconstruction is not an acceptable basis for a §103 rejection.

The Examiner indicates in rejecting claim 44 that the motivation to adjust the vector relationship of electric field gradients of Chiang during atomic layer deposition would have been provided by a recognition that a desired rate of deposition would be dependent on the vector relationship, and thus the vector relationship could be optimized to suit the needs of a process and the desired result. Applicant respectfully submits that such indication by the Examiner is a conclusion that is not suggested by the cited art. Specifically, nothing in Chiang teaches that there would be any benefit to changing the vector of an electric field gradient from one particular orientation to a different orientation during an atomic layer deposition process. Instead, Chiang teaches that an electric field gradient is provided in a

single orientation and is then turned on or off during a deposition process. The Examiner's conclusion that there would be some benefit to being able to change the vector of an electric field gradient is thus not suggested by the cited art.

Since the cited prior art does not suggest the claim 44 recited changing of a vector of an electric field gradient from one orientation to another during atomic layer deposition, claim 44 is allowable over such cited prior art. Applicant therefore respectfully requests formal allowance of claim 44 in the Examiner's next action.

Claim 45 contends from claim 44, and is therefore allowable for least the reasons for which claim 44 is allowable.

Claims 35-45 are allowable for the reasons discussed above, and applicant therefore respectfully requests formal allowance of claims 35-45 in the Examiner's next Action.

Respectfully submitted,

By:   
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